Math 212
Requiz 22A

F 28 Oct / N 30 Oct

Your name: _____

Exercise

(5 pt) You have two lucky pens that you use for multi exams. The length of time that each pen will last is random, somewhere between 0 and 2 hours. More precisely, let x, y denote the length of time that your two pens will last. The probability density function $f(x, y)$ is given by

$$f(x,y) = \begin{cases} \frac{1}{4}xy & \text{if } 0 \leqslant x \leqslant 2, 0 \leqslant y \leqslant 2; \\ 0 & \text{otherwise.} \end{cases}$$

Your multi final is a 3-hour exam. We want to find the probability that at least one of your two pens will still write at the end of the exam.

(a) (1 pt) Sketch the relevant region of integration.

(b) (3 pt) Set up an iterated (!) integral that gives the total probability that at least one of your two pens will still write at the end of the exam. You do not have to evaluate this integral.

(a) (1 pt) Evaluate the integral to find the probability that at least one of your two pens will still write at the end of the exam.